UNITED STATES PATENT AND TRADEMARK OFFICE

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IBM CORPORATION
PO BOX 12195
DEPT YXSA, BLDG 002
RESEARCH TRIANGLE PARK, NC 27709

EXAMINER
COPPOLA, JACOB C

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2008*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-11,13-15,37-40 and 49-52* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-11, 13-15, 37-40, and 49-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____ .

Detailed Action

Acknowledgements

1.   This action is in reply to the Amendments and Remarks filed on 22 April

2008.

2.   Claims 4-11, 13-15, 37-40, and 49-52 are currently pending and have

been examined.

3.   All references to the capitalized versions of "Applicants" refer specifically

to the Applicants of record. Any references to lower case versions of "applicant"

or "applicants" refer to any or all patent "applicants." Unless expressly noted

otherwise, references to "Examiner" refers to the Examiner of record while

reference to or use of the lower case version of "examiner" or "examiners" refers

to examiner(s) generally. The notations in this paragraph apply to this Office

Action and any future office action(s) as well.

4.   This Office Action is given Paper No. 20080627. This Paper No. is for

reference purposes only.

Response to Arguments and Amendments

5.   The arguments filed on 22 April 2008 with respect to the rejections of

claims 4-11, 13-15, 37-40, and 49-52 under 35 USC § 103 have been fully

considered and are persuasive. Accordingly, the rejections from the previous

Office Action mailed on 05 November 2007 have been withdrawn in their entirety.

New rejections to the pending claims can be found below. This Office Action is

non-final.

Claim Rejections - 35 USC § 112, 2nd Paragraph

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out
> and distinctly claiming the subject matter which the applicant regards as his
> invention.

7.   Claims 4-11, 13-15 are rejected under 35 U.S.C. §112, second paragraph,

as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention.

8.   **As per claims 4, 5, 8, 13, and 14**, these claims recite "said computer

system". These claims are indefinite because this component lacks antecedent

basis in the claims. For Prior Art purposes only, the Examiner will interpret "said

computer system" to mean "said central computer system". Appropriate

correction is required.

9.   Additionally, this claim recites "a circuit producing a tamper evident signal

in response to detecting tampering with said meter by disconnecting said meter

from said utility product or by opening a cover of said meter". This claim is

indefinite because one of ordinary skill in the art could not determine if the signal

is produced by the circuit by "disconnecting... or opening..." or if the

"disconnecting... or opening..." merely defines the tampering. For Prior art

purposes only, the Examiner will interpret the above limitation to mean the circuit

produces the signal, but not by actually disconnecting the meter or opening a

cover of said meter.

10. **As per claim 8**, this claim recites "said ordered sequence of alphanumeric values". This claim is indefinite because the cited element lacks antecedent basis in the claim. For Prior Art purposes only, the Examiner will interpret "said ordered sequence of alphanumeric values" to mean "said ordered sequence of values". Appropriate correction is required.

11. Additionally, this claim recites "next value... in an unencrypted form... and encrypted with said private cryptographic key". This claim is indefinite because one of ordinary skill in the art would not understand how the next value is both "in an unencrypted form" and "encrypted". Appropriate correction is required.

12. Additionally, this claim recites "said alphanumeric value received as said message follows, within said ordered sequence..., a version of said alphanumeric value previously transmitted...". This claim is indefinite because one of ordinary skill in the art would not understand what the message is following, the "ordered sequence" or the "version... previously transmitted".

13. The Examiner finds that because the claims are indefinite under 35 U.S.C. §112, 2nd paragraph, it is impossible to properly construe claim scope at this time. However, in accordance with MPEP §2173.06 and the USPTO's policy of trying to advance prosecution by providing art rejections even though these claims are indefinite, the claims are construed and the prior art is applied as much as practically possible.

Claim Rejections - 35 USC § 103

14.　　The following is a quotation of 35 U.S.C. §103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed
> or described as set forth in section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are such that the subject
> matter as a whole would have been obvious at the time the invention was made
> to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was
> made.

15.　　Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Villicana et al. (U.S. 6,819,098 B2) ("Villicana"), in view of Wheeler et al. (U.S.

2002/0026575 A1) ("Wheeler").

16.　　**As per claim 4**, Villicana discloses *a system for receiving data regarding*

usage of a utility product at a plurality of remote locations (see at least column 1,

lines 55+). Additionally, Villicana discloses the limitations:

　　　　a.　　*a central computer system* (system **100**) (see figure 1 and

associated text);

　　　　b.　　*a database* (data center **103**) *accessed by said computer system;*

　　　　c.　　*a plurality of meters* (utility meters **113**) (see figure 1 and

associated text); *and*

　　　　d.　　*a communication network* (Internet **111**) *connecting each meter*

within said plurality of meters with said central computer system to

transmit data to said central computer system ("a connection via the

Internet **111** to system **100** to upload power usage data from meter **113** to

system **100** for storage in data center **103**) (see column 2, lines 39-41);

e.   *said database stores a plurality of data records* ("a data center **103**

that includes relational databases in which utility meter acquired data and

account information is stored") (see column 1, lines 50-60);

f.   *each data record in said plurality of data records includes a meter*

identifier identifying a meter within said plurality of meters associated with

said data record ("transmit the identification number to database **103** so

that the correlation between the identification number and the silicon serial

number may be recorded") (see column 5, line 61 through column 6, line

13);

g.   *each of said meters includes data storage* ("non-volatile memory" or

NVM **205**) *and a microprocessor* (controller **201**) *accessing said data*

storage and programmed to transmit a message (see column 4, lines 28-

54);

h.   *wherein said message includes a data value representing a*

measured usage of said utility product, over said communication network

to said central computer system (see column 4, lines 28-54);

i.   *said central computer system includes a processor programmed to*

receive said message (see column 4, lines 28-54).

Villicana does not specifically disclose the following limitations; however,

Wheeler does disclose the following limitations:

j.   *each data record includes a public cryptographic key of said meter*

(see ¶ 0118);

k.   *meter includes data storage storing a private cryptographic key of said meter* (see ¶ 0145-0148);

l.   *meter microprocessor is programmed to encrypt a message with said private cryptographic key* (see ¶ 0145-0148);

m.   *transmitted message includes an alphanumeric value* (see ¶ 0149);

n.   *information encrypted with said private cryptographic key is decrypted with said public cryptographic key* (see ¶ 0113-0117);

o.   *central computer system processor is programmed to decrypt the received encrypted message with said public cryptographic key of said meter, said message encrypted with said private cryptographic key, forming a decrypted message, and to compare a version of said alphanumeric value from said decrypted message with unencrypted version of said alphanumeric value* (see ¶ 0113-0117: comparison is inherently present in the process of authenticating the digital signature).

p.   *each of said meters includes a circuit producing a tamper evident signal in response to detecting tampering with said meter* ("zeroization capability") *by disconnecting said meter from said utility product or by opening a cover of said meter* ("intrusion of the device"), *said microprocessor within each of said meters is additionally programmed to prevent further transmission of utility usage data in response to said tamper evident signal* ("destroy the functionality of the digital signature component"), *and further transmission of utility usage data is prevented by*

erasing said private cryptographic key ("erase the private key") *stored*

within said data storage (see ¶ 0148).

Therefore, it would have been obvious to one of ordinary skill in the art, at

the time the invention was made, to include in the utility usage reporting system

of Villicana the secure messaging method as taught by Wheeler since the

claimed invention is merely a combination of old elements, and in the

combination each element merely would have performed the same function as it

did separately, and one of ordinary skill in the art would have recognized that the

results of the combination were predictable.

17.   Claims 5, 10, and 11 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Villicana/Wheeler, in view of Callele et al. (U.S. 5,343,516 A)

("Callele"), and in further view of Abumehdi et al. (U.S. 5,367,464 A)

("Abumehdi").

18.   **As per claim 5**, the combination of Villicana and Wheeler, as shown

above in the rejection to claim 4, disclose the limitations:

q.   *said system comprises a central computer system, a database*

accessed by said computer system, a plurality of meters, and a

communication network connecting each meter within said plurality of

meters with said central computer system to transmit data to said central

computer system, said database stores a plurality of data records, each

data record in said plurality of data records includes a meter identifier

identifying a meter within said plurality of meters associated with said data

record and a public cryptographic key of said meter, each of said meters

includes data storage storing a private cryptographic key of said meter

and a microprocessor accessing said data storage and programmed to

encrypt a message with said private cryptographic key and to transmit

said message encrypted with said private cryptographic key, wherein said

message includes an alphanumeric value together with a data value

representing a measured usage of said utility product, over said

communication network to said central computer system, information

encrypted with said private cryptographic key is decrypted with said public

cryptographic key, and said central computer system includes a processor

programmed to receive said message encrypted with said private

cryptographic key, to decrypt with said public cryptographic key of said

meter, said message encrypted with said private cryptographic key.

forming a decrypted message, and to compare a version of said

alphanumeric value from said decrypted message with unencrypted

version of said alphanumeric value.

Villicana/Wheeler, further, disclose the limitations:

    r.   *said communication network additionally connects each meter*

within said plurality of meters with said central computer system to receive

data from said central computer system (see Villicana, column 3, lines

50+: "bi-directional communication"); *and*

    s.   *said processor in said central computer system is additionally*

programmed to store said data derived from said data value representing

a measured usage of said utility product within said data record including

said meter identifier identifying said meter (see Villicana, column 5, line 61

through column 6, line 13: "transmit the identification number to database

103 so that the correlation between the identification number and the

silicon serial number may be recorded"; and column 2, lines 39-41: "a

connection via the Internet **111** to system **100** to upload power usage data

from meter **113** to system **100** for storage in data center **103**; and column

1, lines 50-60: "a data center **103** that includes relational databases in

which utility meter acquired data and account information is stored". See

also Wheeler, figures 2a-b and associated text) *in response to determining*

that said decrypted message matches said unencrypted version of said

message (see Wheeler, ¶ 0113-0117 and ¶ 0145-0148).

Villicana/Wheeler does not specifically disclose the following limitations:

> t.   *said processor in said central computer system is additionally*
>
> *programmed*
>
> u.   *to generate and store a random value to be used as said*
>
> *alphanumeric value;*
>
> v.   *to call each meter in said plurality of meters on a periodic basis*
>
> *over said communication network; and*
>
> w.   *to transmit said random value to said meter.*

Callele, however, discloses the following limitations:

> x.   *said processor in said central computer system is additionally*
>
> *programmed to call each meter in said plurality of meters on a periodic*

basis over said communication network ("the purpose of this invention is

to allow utility companies to remotely query the meter reading via the

telephone network") (see column 17, lines 35-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at

the time the invention was made, to modify the system of Villicana/Wheeler so

that the system **100** could call the meter, as disclosed by Callele. One would

have been motivated to do so because "this eliminates the need to have an

individual physically visit each site to determine the consumption for a given time

period" (see Callele, column 17, lines 35-43).

Additionally, Abumehdi discloses the following limitations:

> y.   *said processor in said central computer system is additionally*
>
> *programmed to generate and store a random value to be used as said*
>
> *alphanumeric value* ("this message contains a random number generated
>
> by the resetting terminal) (see column 8, lines 5+); *and*
>
> z.   *to transmit said random value to said meter* ("the resetting terminal
>
> sends a series of messages to the meter to read and send to the terminal
>
> in encrypted format the accounting data held in the registers of the non-
>
> volatile memories 19, 20 of the meter") (see column 8, lines 5+).

Therefore, it would have been obvious to one of ordinary skill in the art, at

the time the invention was made, to modify the system of Villicana/Wheeler to

include the use of a random number as disclosed by Abumehdi. One would have

been motivated to do so because the inclusion of a random number with the

transmitted data allows detection of duplicate messages (see Wheeler, ¶ 0115).

19.   **As per claim 10**, Villicana/Wheeler/Callele/Abumehdi, as shown above,

disclose the limitations of claim 5. Additionally, and as shown above in the

rejection to claim 5, Villicana/Wheeler/Callele/Abumehdi discloses the following

limitations:

> aa.   *wherein said central computer system is additionally programmed*
>
> *to receive a transmission over said communication network from an*
>
> *additional meter, to receive a meter identifier and a public cryptographic*
>
> *key from said additional meter, and to record said meter identifier and said*
>
> *public cryptographic key received from said additional meter in an*
>
> *additional data record within said database.*

Villicana/Wheeler/Callele/Abumehdi, further, discloses the limitations:

> bb.   *wherein said central computer system is additionally programmed*
>
> *to recognize a set up request code transmitted from said additional meter*
>
> (see Villicana, column 6, lines 20+).

20.   **As per claim 11**, Villicana/Wheeler/Callele/Abumehdi, as shown above,

disclose the limitations of claim 5. Additionally,

Villicana/Wheeler/Callele/Abumehdi discloses the following limitations:

> cc.   *a* server *computer* (server **101**) *having an interface for*
>
> *communicating over a computer network with at least one client computer*
>
> (computer **117**) *and accessing said database, wherein said server*
>
> *computer receives data from said client computer including a meter*
>
> *identifier stored in a data record within said database, and said server*
>
> *computer writes data received from said client computer to said data*

record within said database (see Villicana, column 3, lines 60+; column 7,

line 21 through column 8, line 26; figure 7 and associated text).

21.   **As per claim 13**, this claim encompasses substantially the same scope as

claim 5. Accordingly, claim 13 is rejected in substantially the same manner as

claim 5, as described above.

22.   Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Villicana/Wheeler, in further view of Callele.

23.   **As per claims 6 and 7**, the combination of Villicana/Wheeler discloses

the limitations of claim 5, as described above. Villicana/Wheeler does not

specifically disclose the following limitations; however, Callele does disclose the

limitations:

dd.   *wherein said microprocessor in each meter in said plurality of*

meters is additionally programmed to determine whether a call received

over said communication network has come from said central computer

system ("the ICLID information can be used to verify which utility is

calling") (see column 17, lines 35+);

ee.   *wherein said communications network includes a switched*

telephone network ("telephone network") (see column 17, lines 35+); *and*

ff.   *a determination of whether said call received over said*

communication network is made using a process for identifying a caller

over a telephone network (see column 17, lines 35+).

Therefore, it would have been obvious to one of ordinary skill in the art, at

the time the invention was made, to include in the meter system of

Villicana/Wheeler the ability to determine the caller as taught by Callele since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

24.   Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Villicana/Wheeler, in further view of Johnson (U.S. 6,078,888 A) ("Johnson").

25.   **As per claim 8**, the combination of Villicana and Wheeler, as shown above in the rejection to claim 4, disclose the limitations:

gg.   *said system comprises a central computer system, a database accessed by said computer system, a plurality of meters, and a communication network connecting each meter within said plurality of meters with said central computer system to transmit data to said central computer system, said database stores a plurality of data records, each data record in said plurality of data records includes a meter identifier identifying a meter within said plurality of meters associated with said data record and a public cryptographic key of said meter, each of said meters includes data storage storing a private cryptographic key of said meter and a microprocessor accessing said data storage and programmed to encrypt a message with said private cryptographic key and to transmit said message encrypted with said private cryptographic key, wherein said message includes an alphanumeric value together with a data value*

representing a measured usage of said utility product, over said

communication network to said central computer system, information

encrypted with said private cryptographic key is decrypted with said public

cryptographic key, and said central computer system includes a processor

programmed to receive said message encrypted with said private

cryptographic key, to decrypt with said public cryptographic key of said

meter, said message encrypted with said private cryptographic key.

forming a decrypted message, and to compare a version of said

alphanumeric value from said decrypted message with unencrypted

version of said alphanumeric value.

Villicana/Wheeler does not specifically disclose the following limitations;

however, Johnson does disclose the following limitations:

hh.   *said microprocessor in each meter in said plurality of meters is*

additionally programmed to generate an ordered sequence of values for

use as each said alphanumeric value, and to transmit, on a periodic basis,

to said central computer system, a next value from said ordered sequence

of alphanumeric values, in an unencrypted form and as combined with

said value representing said measured usage of said utility product and

encrypted with said private cryptographic key, and said processor within

said central computer system is additionally programmed to receive said

unencrypted form of said value in said ordered sequence of values as

unencrypted version of said alphanumeric value, to determine whether

said alphanumeric value received as said message follows, within said

ordered sequence of alphanumeric values, a version of said alphanumeric

value previously transmitted from said meter, and to store data derived

from said value representing a measured usage of said utility product

within said data record including said meter identifier identifying said meter

in response to determining that said decrypted message matches said

unencrypted version of said message together with determining that said

alphanumeric value follows said version of said alphanumeric value

previously transmitted from said meter (see column 11, lines 45+).

26.   **As per claim 9**, Villicana/Wheeler/Johnson discloses the limitations of

claim 8, as described above. Villicana/Wheeler/Johnson, further, discloses the

limitations:

      ii.   *wherein said central computer system is additionally programmed*

to read said version of said alphanumeric value previously transmitted

from said meter from said data record including said meter identifier

identifying said meter and to write said alphanumeric value received as

said message to said data record including said meter identifier (see at

least Johnson, column 11, lines 45+).

27.   **As per claims 14 and 15**, these claims encompass substantially the

same scope as claims 8 and 9. Accordingly, claims 14 and 15 are rejected in

substantially the same manner as claims 8 and 9, as described above.

28.   Claims 37-40 and 49-52 are directed to methods and computer-readable

medium of the above system claims and are rejected accordingly.

29.   The Examiner has pointed out particular references contained in the prior

art of record within the body of this action for the convenience of the Applicant.

Although the specified citations are representative of the teachings in the art and

are applied to the specific limitations within the individual claim, other passages

and figures may apply. Applicant, in preparing the response, should consider fully

the entire reference as potentially teaching all or part of the claimed invention, as

well as the context of the passage as taught by the prior art or disclosed by the

Examiner.

30.   In accordance with *In re Lee*, 277 F.3d 1338, 1344-45, 61 USPQ2d 1430,

1434-35 (Fed. Cir. 2002), the Examiner finds that the references How Computers

Work, Millennium Ed. By Ron White; How Networks Work, Bestseller Ed. By

Frank J. Derfler et al.; How the Internet Works, Millennium Ed. By Preston Gralla;

and Desktop Encyclopedia of the Internet By Nathan J. Muller, is additional

evidence of what is basic knowledge or common sense to one of ordinary skill in

this art. Each reference is cited in its entirety. Moreover, because these

references are directed towards beginners (see *e.g.* "User Level Beginning..."),

because of the references' basic content (which is self-evident upon examination

of the references), and after further review of the entire record including the prior

art now of record in conjunction with the factors as discussed in MPEP §2141.03

(where practical), the Examiner finds that these references are primarily directed

towards those of low skill in this art. Because these references are directed

towards those of low skill in this art, the Examiner finds that one of ordinary skill

in this art must—at the very least—be aware of and understand the knowledge and information contained within theses references.

Conclusion

31.   Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to Jacob C. Coppola whose telephone number is (571) 270-3922. The Examiner can normally be reached on Monday-Friday, 9:00 a.m. - 5:00 p.m. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Andrew Fischer can be reached at (571) 272-6779.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, please contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

/Jacob C Coppola/
Examiner, Art Unit 3621
June 27, 2008

/ANDREW J. FISCHER/
Supervisory Patent Examiner, Art Unit 3621